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ABSTRACT

The assumption that "ideal" text grammars are valid descriptions of the schemata used by children to organize their recall of text was challenged in a study involving 150 elementary school children. The children, all with above-average reading ability, were classified as having one of three types of schemata: theme-initial (identifying the initial event of the text as the theme--the schemata used by adults), theme-final (identifying the final event of the text as the theme), and no-theme-structure (failing to use thematic structure to aid in prose processing). They then read and recalled 12 paragraphs representing the three schemata conditions. The results demonstrated that children's recall of text is a function of schemata structure as well as of text structure. The findings suggest that while ideal grammars may be valid descriptions for adults who share a common schemata, they are not always valid descriptions for children who have different schemata structures. (FL)

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THREE TYPES OF SCHEMATA IN CHILDREN'S RECALL OF COHESIVE AND NONCOHESIVE TEXT

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THREE TYPES OF SCHEMATA IN CHILDREN'S RECALL OF COHESIVE AND NONCOHESIVE TEXT

Abstract

This paper challenges the popular assumption that "ideal" text grammars are valid descriptions of children's schemata which children use to organize their recall of text. This paper first demonstrates that children with different schemata recall paragraphs quantitatively and structurally quite differently depending upon the relation of a paragraph's theme structure to a given child's schemata structure. This paper proceeds to argue that since children have different schemata which result in different types of recall of text, thus ideal text grammars must be constructed relative to a child's schemata type. In short, there are no absolute ideal grammars for children's schemata.

A common assumption underlying the research of prose processing is that readers use some type of schematic representation of text to guide the encoding and retrieval process. These schemata are often defined as the expectations people have concerning the parts which should occur in stories and paragraphs and the relationships which should occur among the parts (cf. Stein, 1977). An additional assumption is that there exists an "ideal" structure of stories and paragraphs which correspond to the expectations readers have about these structures.

On the basis of these assumptions, several story grammars (Rumelhart, 1975; Mandler & Johnson, 1977; Stein & Glenn, 1977a; Thorndyke, 1977) and paragraph grammars (Frederiksen, 1977; Kintsch, 1974; Meyer, 1975; Norman & Rumelhart, 1975) have been devised. The reasoning behind these grammars is that since ideal text and schematic structures are isomorphic, grammars which adequately describe text structures are concurrently valid descriptions of schematic structures.

To support this reasoning, researchers have operationalized these grammars by requiring subjects to recall and produce stories and paragraphs, and to make intuitive decisions concerning the relative importance of given linguistic units within a text hierarchy. In general, since the outcomes of recall, production and importance-rating procedures correspond to the predictions made on the basis of such grammars, it is claimed that these grammars have psychological validity.

The question of whether ideal grammars of adult discourse processing can be applied as descriptions to children's discourse processing is an unresolved issue. On the one hand, there is evidence to support the hypothesis that children process text as do adults. This evidence stems largely from research investigating children's comprehension of stories (cf. Mandler &

Johnson, 1977; Stein, 1976, 1977; Stein & Glenn, 1977a, b). In these studies, children's schematic representation of text tended to conform to ideal story grammars.

On the other hand, there is evidence that children's schematic structures do not always reflect ideal grammar structures. For example, several studies (Bronckart & Sinclair, 1973; Brown, 1976; Brown & French, 1976; Brown & Murphy, 1975) have found that preoperational children often demonstrate a strategy processing the end result of an action sequence first. In sum, while older children employ strategies which closely follow the real order of events, younger subjects (3-5 years) often begin their verbal description with the terminal event and restrict their description to this event alone (Bronckart & Sinclair, 1973). When attempting to physically reconstruct a logical sequence of pictures, Kindergarten subjects show a strong tendency to choose the terminal item first, while older children prefer to select the initial item first (Brown, 1976).

Besides this group of children who structure narratives beginning with the final event, there is another group of children who also fail to process prose in the manner predicted by ideal grammars. This group is comprised of those children who have little sense of the macrostructure of text; they tend to employ strategies which randomly process text structures (cf. Brown & French, 1976; Brown & Murphy, 1975).

The significant question raised by these studies is whether children's processing of narratives deviated because of factors inherent in the text or because these children had expectancies about text structure which significantly differed from the ideal structure as described by some grammar. Stein (1977) has attempted to account for these descrepancies by arguing that Brown in her

studies had overlooked certain text variables. In particular, Stein (1977, p. 101) has noted:

> In our studies with younger children we have been very careful to maintain the exact sequence of events as specified in our story grammar. Moreover, we have constructed stories whose content was initially collected from four and five year old children. When these techniques were used, even pre-school children made so few temporal sequencing errors that Brown's comments concerning recall in pre-schoolers must be re-evaluated. It may be that the narrative structures presented to Brown's children were somewhat unfamiliar in terms of content or that not all statements in the narrative were perceived as being directly related to one another.

Given the consistency, however, with which children deviated from the ideal grammar in Brown's experiments, Stein's criticisms are suspect.

Another possible explanation of these descrepancies is that these children had different expectancies for identifying and relating the different parts of the story. Brown's studies suggest that there are three ways children's schemata may be organized. The most common case is where children's schemata match those of adults. Here children identify the initial event as the theme of the discourse (cf. Meyer, 1977a, b). This theme establishes the situational context for the remainder of the paragraph. Moreover, the theme suggests plausible inferences about the paragraph context that provides a set of expectations against which future information may be matched (cf. Thorndyke, 1976).

A second way children's schemata may be organized is the case where children identify the final event of a text as the theme. Children then proceed to generate and select inferences from newly encountered events in light of this theme. If these new events fit into the context of this theme, they are stored

with their inferences, and new events are processed. If there is no theme to actively organize the new events, backwards inferencing may be initiated to establish a connection with a previous situational theme. If no inferential chain is found, the current event will be stored without an organizational context (Thorndyke, 1976).

A third way children's schemata may be organized is the case where children fail to use thematic structures to aid in the generation and selection of inferences. In other words, there are those children who tend to store events independent of the theme context; their processing tends to be episodic whereby each event is processed without the benefit of a superordinate context. Each event is treated as new information and processed without reference to preceding and proceeding events.

If the discrepancies of Brown's findings are the result of children having different schemata for representing discourse, then the following predictions should be supported. The first prediction stems from the findings that recall is maximum when the text structure is isomorphic with the reader's schemata for comprehending text (e.g. Stein & Nezworksi, 1977; Thorndyke, 1977). On the basis of these findings, one would predict that children who expect the theme to occur initially will recall more than children who expect the theme to occur finally in paragraphs where the theme comes at the beginning. And, conversely, one would predict that children who expect the theme to occur finally will recall more than children who expect the theme to occur initially in paragraphs where the theme appears at the end of the paragraph. Children who have no knowledge of theme structure should process theme-first and theme-final paragraphs equally poorly, since in neither case are these children able to organize their expectancies of paragraph content around an identified

theme. For this reason also, these children should fail to recall as much as children with expectancies of theme structure in either the theme-first or theme-final paragraph conditions.

A second prediction stems from the findings that children tend to structure their recall in the order in which their schemata represent the text (e.g. Stein, 1976; Stein & Glenn, 1977a; Stein & Nezworski, 1977). According to these findings, one would predict that children with theme-initial expectancies would tend to recall the theme initially in their protocols significantly more often than children with either theme-final schemata or with no theme-structure expectancies. And similarly, one would expect children with theme-final expectancies to recall the theme finally significantly more often than children with either theme-initial expectancies or with no theme-structure expectancies.

A third prediction is based on Thorndyke's (1976) observation that even in cases where no specific theme exists for a thematically structured paragraphs, subjects with theme-structure schemata are able to generate their own themes. These themes provide a structure for encoding and recalling paragraphs. Theme-structure schemata thus facilitate recall. On the basis of this observation, one would predict that children with theme-structure schemata will better recall thematically structured paragraphs with no themes than will children with no theme-structure expectancies.

A final prediction is that in paragraphs without theme structure, the amount of recall for children with schemata for theme structure should not be significantly greater than the amount of recall for children with no schemata. This prediction is based on the assumption that if schemata for theme structure is what enables children with theme-structure expectancies to

better recall than children without these expectancies, then the former children should have no advantage over the latter when the text is devoid of such structure. This final prediction, of course, is based on the assumption that other abilities are held constant.

These predictions were tested in the following experiment.

Method

Subjects. One-hundred and fifty subjects participated in the experiment. Fifty subjects were second graders, 50 were third graders, and 50 were fourth graders. Subjects were selected from several second-, third-, and fourth-grade classrooms in two rural elementary schools in Chagrin Falls, Ohio. In order to equalize general reading ability, all subjects were identified as above-average readers for their grade level using two criteria: Children's performance on the Stanford Reading Tests (1973 Revision) and the classroom teachers' ratings of the subjects' reading abilities (classroom pool populations were rated on the scale of superior, above average, average, poor, and nonfunctional readers).

Once the 150 above-average readers were identified, these subjects were then classified as having theme-initial schemata, theme-final schemata, or no-theme-sturcture schemata. Subjects were so classified on the basis of criteria derived from a modification of Brown's (1976) picture paradigm. First, subjects were individually presented with a series of eight stories, each containing six pictures. Before each story, a color card was presented. This served to color code the stories so that the experimenter could refer to each story without imparting story-content information and also so that the children could use the colors as mneumonic devices in their recall.

After the children saw the pictures presented in their proper narrative sequence, they performed simple arithmetic problems for several minutes. The subjects were then asked to orally recall the event they "remembered the most" in each story. If the subject recalled the initial event five or more times, s/he was classified as having theme-initial schemata. If the subject classified the final event five or more times, s/he was classified as having theme-final schemata. Subjects who recalled less than a total of five initial or five final events were classified as having no-theme-structure schemata. Of the 150 subjects, 75 subjects were identified as having theme-initial schemata. The mean age of this group was 8.6 years. Forty-four subjects were classified as having theme-final schemata. The mean age of this group was 8.3 years. Finally, 31 subjects were identified as having no-theme-structure schemata. The mean age of this group was 8.4 years.

One purpose for using picture narratives instead of written or oral narratives to classify children's schemata type was to provide some consistency between Brown's (1976) study and the present study. Another reason for using picture narratives was to indirectly answer the question, Do children's schemata for recalling picture narratives operate in a similar manner for recalling written narratives? The assumption here is that if expectancies organize picture narratives around either an initial or final event, these expectancies should so operate in the organizing of written narratives. If schemata for picture and written narratives represent a single memory system (cf. Chase & Clark, 1972; Rosinksi, Pellegrino, & Siegel, 1977), the preceding narratives should yield functional differences in how children comprehend written paragraphs. One would further

predict that these differences would be in accord with the previous predictions.

Stimulus materials. Nine paragraphs were first constructed without any themes. All paragraphs were written in the past tense. Four paragraphs were descriptive of events and five were descriptive of states. An example of an event paragraph was:

> (1) Mary looked and looked. She found Tom hiding in a closet. She peeked under the table and found Bill. Suddenly it thundered. The thunder was so loud that all the children came out from hiding. Mary cried, "This is no fun. Every time it thunders, you all quit playing. I don't want to do this any more."

An example of a state paragraph was:

> (2) John's sister liked to play jump rope but his sister had no jump rope. For two years now, John's sister had asked for a jump rope for Christmas but had never gotten one. Moreover, John's sister loved David. It was sad that David did not like John's sister. John's sister had David's picture on the wall but David never even would say "hi" to his sister.

These nine paragraphs were randomly assigned to each subject across Theme conditions. The only constraint in randomly assigning paragraphs was that once a paragraph had been assigned to a Theme condition for a given subject, this paragraph was removed from the random selection pool before randomly assigning additional paragraphs to this subject for the remaining Theme conditions.

When paragraphs were assigned to either a Theme-First or a Theme-Final paragraph condition, a theme was constructed and placed either before or after the constructed nontheme paragraph. The theme constructed for paragraph (1) was "On this rainy day, Mary and her friends tried to play hid and seek." The theme for paragraph (2) was "There were these two reasons why John thought

his sister was unhappy."

For purposes of this experiment, a theme was descriptively defined as that statement which establishes the situational context for the rest of the paragraph. In short, the theme establishes a context which facilitates relating one statement to another (cf. Thorndyke, 1976). In addition to this definition, the themes in this experiment were operationally defined in the following manner. First, the paragraphs of the Theme-First and Theme-Final conditions were randomly assigned to two graduate classes with the only constraint being that if a paragraph of one Theme condition was assigned to one group, the paragraph with the corresponding opposite Theme condition would be assigned to the second group. There were 18 subjects in the first class and 24 in the second. Subjects were tested in two groups corresponding to the two classes. Subjects were instructed to read each paragraph and underline the statment they thought best fit this study's descriptive definition of a theme. These subjects were provided with the additional option of not underlining any statement if they thought there was no statement that met the description of this study's definition of a theme. In sum, there was 98% agreement with what this study identified as themes for Theme-First paragraphs; there was 93% agreement with what this study identified as themes for the Theme-Final paragraphs. Based on previous research (e.g. Brown & Smiley, 1977; Stein & Glenn, 1977a) these percentages appeared to be high enough to warrant the assumption that the themes in this study corresponded to some type of psychological reality.

By adding the themes, either intially or finally, to the original nontheme paragraphs, this brought the total number of propositions per theme paragraph to 35. Since the number of propositions per paragraph has been demonstrated to be a

significant variable in effecting amount of recall (cf. Kintsch & Keenan, 1974), the original nine paragraphs that were assigned to the No-Theme condition were expanded so as to be comprised of 35 propositions also. Similarly, each paragraph constructed for the fourth condition, i.e. the unrelated sentences condition, likewise was comprised of 35 propositions (see example in Table 1). The concept of proposition was interpreted in the manner following Kintsch (1974).

The grammatical properties of the stimulus materials were controlled for as follows. The words used in the construction of paragraphs in all four paragraph conditions were taken from basal readers and reading materials familiar to the second graders. All nouns were equated for on the basis of frequency (Kučera & Francis, 1967), imagery, and concreteness (Paivio, Yuille, & Madigan, 1968). All nouns used had imagery ratings of greater than 5.07 and concreteness rating of greater than 5.49. In the paragraphs with related sentences (i.e. paragraphs in the Theme-First, Theme-Final, and No-Theme-But-with-Thematic-Structure conditions), care was taken to equalize the number of repetitions of proposition arguments (cf. Kintsch, Kozminsky, Streby, McKoon, & Keenan, 1975). Themes which occurred in event paragraphs were constructed such that the subject-actor of the paragraph was identified; the type of activity the subject was engaged in was also specified (see example in Theme-Final Paragraph condition in Table 1). Themes which occurred in state paragraphs were related to the nontheme sentences by what might be called an ENUMERATE relation. This relation indicates that a list of states or events are to follow the theme (see example in Theme-First Paragraph condition in Table 1).

Event paragraphs were paragraphs whose theme identified an event to be further clarified. In these paragraphs' themes, nonstative verbs were used. The basic relation between statements in event paragraphs was the THEN relation. This relation refers to the case in which one statement temporally precedes a second statement but does not directly cause the second (cf. Stein & Glenn, 1977a). In the preceding example of paragraph (1), the statement "She found Tom hiding in a closet" is temporally related (i.e. precedes in time) to the next statement "She peeked under the table."

State paragraphs were paragraphs whose theme identified a state of mind which was further clarified by the nontheme statements. Stative verbs were used in these themes. The basic relation between nontheme statements in state paragraphs was the AND relation. This relation can either describe the case in which two statements co-occur in time or it can describe the relation between two statements in which there is no apparent temporal sequence existing between the statements (cf. Stein & Glenn, 1977a). The word <u>but</u> serves to designate the AND relation in the preceding example of paragraph (2): "John's sister liked to play jump robe <u>but</u> his sister had no jump rope."

In addition to AND and THEN relations, another relation which appeared in each paragraph was the CAUSE relation. This relation refers to the case in which one statement directly influences the occurrence of a second statement (cf. Stein & Glenn, 1977a). This relation often is explicitly represented by the word <u>because</u>. Note, in the preceding example of paragraph (1), this relation is implicit between the statements "The thunder was so loud that all the children came out from hiding." These statements could easily be restated as: "Because the thunder was so loud, all the children came out from hiding."

Procedure. The resulting design of the experiment was a 3(Schemata Type)x4(Theme Condition, Paragraph Type). The three schemata types included subjects who expected the theme to occur at the beginning of the paragraph, subjects who expected the theme to occur at the end of the paragraph, and subjects who were insensitive to theme structure. The four Paragraph conditions included paragraphs with the theme occurring at the beginning, paragraphs with the theme occurring at the end, paragraphs with no themes but having thematic structure, and paragraphs with no themes and no thematic structure. Paragraphs were constructed and randomly assigned to each subject in the manner described in the preceding section.

Each subject was individually tested in two sessions. Each subject read 12 paragraphs representing the four paragraph conditions. The subject would silently read three paragraphs representing a given condition, with a 30 second break between paragraphs. The subject would then perform several simple arithmetic operations for seven minutes. Each subject then verbally recalled as much as s/he could remember about the paragraph. Remponses were tape-recorded and later transcribed. In all cases, the subjects were told before the experiment that they would be asked to recall as many ideas as they could remember after reading three separate paragraphs. Recall was defined in terms of the number of propositions in the oral recall that were identical to or synonymous with a predetermined list of propositions. The concept of proposition for scoring was again interpreted in the manner following Kintsch (1974).

Results

The data were analyzed in two ways. First, the data were scored in terms of the total number of propositions each subject

recalled after reading three paragraphs per Paragraph condition. An Analysis of Variance was performed on these recall scores. The results clearly indicate that children's schemata for theme placement and theme structure and the type of paragraph being read significantly influence children's recall of paragraphs (see Table 2). The difference of recall scores among Expectancies

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Insert Table 2 about here.

Groups proved significant, $F(2, 147)=152.23$, $MSe=.83$, $p < .01$, as did the difference among Paragraph Types, $F(3, 441)=154.15$, $MSe=.60$, $p < .01$.

The first set of predictions was that children who expect the theme to appear initially will recall more than children who expect the theme to occur finally in paragraphs where the theme comes at the beginning. And, conversely, children who expect the theme to occur finally will recall more than children who expect the theme to occur initially in paragraphs where the theme appears at the end of the paragraph. Children who have no expectancies of theme structure should process theme-first and theme-final paragraphs equally poorly. It was further predicted that children with no expectancies for theme structure would fail to recall as much as children with expectancies of theme-structure in either the theme-first or theme-final paragraph conditions.

Using a series of Scheffés, it was found that the significance between and within group differences supports these predictions. Subjects with Theme-Final expectancies recalled significantly more propositions than those who had Theme-First expectancies or who had no expectancies for theme structure when the theme occurred

in paragraph final position (F=8.98, $p < .01$). Also within this condition, subjects who had Theme-First expectancies recalled significantly more propositions than did the group who had no expectancies for theme structure (F=9.23, $p < .01$).

Subjects with Theme-First expectancies recalled significantly more propositions than did subjects with Theme-Final expectancies or no expectancies for theme structure (F=10.08, $p < .01$). Also within this condition, subjects with Theme-Final expectancies recalled significantly more propositions than did the subjects with no theme expectancies (F=12.31, $p < .01$).

Another prediction was that subjects with schemata for theme position and theme structure should better recall thematically structured paragraphs with no themes than should children with no schemata for theme structure. The findings supported this hypothesis. In the case of paragraphs with thematic structure but without themes, the two groups of subjects with theme expectancies both recalled significantly more propositions than did the group of subjects who had no expectancies for theme structure (F=7.64, $p < .01$). Furthermore, there was no significant difference in the amount recalled between subjects with Theme-First expectancies and Theme-Final expectancies (F=1.33, $p < .01$).

A third prediction was that in paragraphs with no themes and no theme structure, the amount of recall for children with schemata for theme structure would not be significantly greater than the amount of recall for children with no schemata for theme structure. This, in fact, proved to be the case (F=.79, $p > .01$).

In addition to these between-group comparisons, within group comparisons further substantiated the preceding predictions. Subjects in the Theme-First Expectancies group recalled significantly

more propositions for Theme-First Paragraphs than for the Theme-Final Paragraphs (F=17.84, $p < .01$), significantly more propositions in the Theme-Final Paragraph condition than for the No-Theme-Paragraph-with-Thematic-Structure condition (F=6.07, $p < .01$), and significantly more propositions for the No-Theme-Paragraph-with-Thematic-Structure condition than for the No-Theme-Paragraph-with-No-Thematic-Structure condition (F=6.53, $p < .01$). Similarly, the Theme-Final-Expectancy group recalled significantlymore propositions in the Theme-Final Paragraph condition than in the Theme-First Paragraph condition (F=6.89, $p < .01$), significantly more proposition in the Theme-First Paragraph condition than in the No-Theme-Paragraph-with-Thematic-Structure condition (F=14.01, $p < .01$), and significantly more propositions in the No-Theme-Paragraph-with-Thematic-Structure condition than in the No-Theme-Paragraph-with-No-Thematic-Stucture condition (F=12.26, $p < .01$). There was no significant differences between paragraph conditions for the group with no expectancies for theme structure.

The second manner in which the data was analyzed was in terms of the frequency with which themes were recalled either initially or finally in the recall protocols of the three groups. This analysis was performed in order to test the hypothesis that children tend to structure their recall in the order in which their schemata represent the text. This hypothesis was well supported. In sum, it was found that subjects with theme-initial schemata recalled the theme first 71% of the time, subjects with theme-final schemata recalled the theme first 6% of the time; subjects with no-theme-sctructure schemata recalled the theme first 2% of the time. Subjects with theme-initial schemata recalled the theme finally 5% of the time;

subjects with theme-final schemata recalled the theme last 66% of the time; subjects with no schemata recalled the theme finally 3% of the time. These percentages were calculated based on the number of themes subjects recalled after reading both Theme-First and Theme-Final paragraphs. In other words, these percentages were calculated by summing the total number of themes recalled initially and finally and by dividing both these by the total number of paragraphs read.

A 3(Expectancies Group)x2(Number of Initial and Final Themes Recalled) Analysis of Variance demonstrated significant difference among Expectancies Groups, $F(2, 147)=16.08$, $MS_e=.12$, $p < .01$, and between Theme-Placement conditions, $F(1, 147)=14.05$, $p < .01$. A series of Scheffés revealed that subjects with theme-initial schemata recalled the theme first significantly more frequently than subjects with theme-final schemata or with no schemata for theme structure. There was no significant difference between the number of themes initially recalled in the Theme-Final group and in the group without expectancies for theme structure ($F=1.93$, $p > .01$). Subjects with theme-final schemata recalled the theme last significantly more frequently than the Theme-First Expectancies group and the group with no theme-structure expectancies. There was no significant difference between the number of themes finally recalled in the Theme-First group and in the group with no-theme structure schemata. Finally, another series of Scheffés revealed that Theme-First subjects recalled the theme significantly more initially than finally; that Theme-Final subjects recalled the theme significantly more finally than initially; and that subjects with no expectancies for theme structure failed to recall the theme more significantly in either initial or final position ($F=.83$, $p < .01$).

Discussion

This study's findings demonstrated that children's recall of paragraphs is not only a function of paragraph structure but also of schemata structure. This suggests that while ideal grammars may be psychologically valid descriptions for adults who share a common schemata structure, these grammars are not always psychologically valid descriptions for children who have different schemata structures.

These results are in general support of Brown's findings (Brown, 1976; Brown & French, 1976; Brown & Murphy, 1975) and in general disagreement with Stein's findings (Stein, 1977; Stein, 1976; Stein & Glenn, 1977a, b; Stein & Nezworski, 1977). There are several reasons why this discrepancy might exist. First, the present study used paragraphs rather than stories as the basic stimulus unit. An unresolved question is to what extent are schemata for stories similar to schemata for paragraphs? Can these different text structures ultimately be described by the same grammar? In Brown's studies, it is difficult to determine whether children were processing the stimuli as stories or as paragraphs. If story and paragraph schemata are different and children were using paragraph schemata for processing Brown's stimuli, this would explain why this study's findings tended to be more in line with Brown's results than Stein's.

Another unresolved problem which may have produced different results in the present study vis-a-vis Stein's work is that Stein presented her materials orally while this study presented the materials visually. An unresolved question is, Do children have different schemata for aural and visual processing? Although this study suggests that schemata for pictorial processing is similar to the schemata for written-language processing (since

the classification of children by their recall of pictures yielded a functional classification of children in their recall of written text), this study fails to resolve the question of what extent do children organize prose differently in reading and listening.

An additional question which this study raises is that whereas children in Brown's study who demonstrated theme-final or no-theme-structure expectancies tended to be quite young (i.e. less than 7 years), this study found older children (i.e. as old as ten years) with these unusual expectancies. Perhaps this finding is again a function of the fact that older children organize prose theme-finally or episodically as a result of the way they've learned to read. This finding indeed needs further investigation.

A final possible explanation for the discrepancy between this study's findings and the findings of those who argue that adult grammars generalize to children is that researchers claiming to have demonstrated the isomorphism between text structure and schemata structure tend to use normative data. Givent hat children with theme-final or no-theme-structure expectancies tend to be fewer in number, perhaps these children simply do not affect the variance in recall protocols significantly enought to be recognized for their difference.

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Table 1

Examples of the Stimulus Sets Representing the Four Paragraph Conditions

Theme-First Paragraph

John wanted many things for his birthday next month. He wanted an orange football with white stripes so that he and his younger sister could play football together. He also wanted the bicycle he had seen in Mr. Jone's drugstore window. But more than anything, John wanted a square chocolate cake with six white candles, some vanilla ice cream, and a big party.

Theme-Final Paragraph

Mr. Brown helped Sally stand by holding both her hands. When Mr. Brown let go, Sally was standing by herself. Then she put one foot slowly in front of the other. She began to walk. Mr. Brown cried, "Look, Sally! You're walking!" Sally was so frightened by her father's cry that she fell down. This was baby Sally's first walking adventure.

No-Theme Paragraph with Thematic Structure

This tree was old and it had many dead branches. Many bees lived in the trunk of the tree. Two birds lived in a nest on the largest branch. The tree had yellow leaves and, in the spring, it even had pink flowers. Years ago, a man picked the tree's green apples. The man's wife made a pie with these apples. A week later, the man and his two sons ate the pie under this tree.

No-Theme Paragraph with No Thematic Structure

The tall bird had funny legs and flat feet. The kite got caught in the wires. Today it rained but yesterday it snowed. I like jello when it melts. Jerry can run as fast as Jane. The glass broke. Alice can swim. The fire burned many nice homes. The brown and white dog chased the yellow cat around the barn. The moon hid behind a large black cloud. Paint brushes and paper covered the round table.

Table 2

Total Number of Propositions Recalled after Subjects With Different Schemata Types Read Three Paragraphs Per Paragraph Condition

	Theme First Paragraph	Theme Final Paragraph	No Theme Paragraph w/ Thematic Structure	No Theme Paragraph w/ No Thematic Structure
Theme-First Expectancies Gp.	34	26	23	20
S. D.	3.87	3.34	3.30	3.06
Theme-Final Expectancies Gp.	27	32	24	18
S. D.	3.74	3.99	4.15	4.02
Gp. w/out Expectancies for Theme Structure	19	20	20	18
S. D.	3.39	3.41	3.85	3.44